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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/773,108

02/05/2004

Andy Yu

DKT 99097A  
(BW1-00082)

3939

7590

07/06/2006

Patent Docket Administrator Borgwarner Inc.  
Powertrain Technical Center  
Suite 100  
3800 Automation Avenue  
Auburn Hills, MI 48326

EXAMINER

HO, HA DINH

ART UNIT

PAPER NUMBER

3681

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/773,108	<b>Applicant(s)</b> YU ET AL.	
	<b>Examiner</b> Ha D. Ho	<b>Art Unit</b> 3681	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 8-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This Office Action is responsive to Applicant's Amendment filed on 05/01/06. Claims 1-20 are currently pending.
2. Claims 8-15 were withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/02/05.

#### ***Claim Objections***

3. Claims 1 and 16 are objected to because of the following informalities: "the transmission" recited in line 2 of claim 1, and in line 3 of claim 16 should be changed to --a transmission--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 6, 7, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frost (US 6,612,959) in view of Sherman (US 5,511,639).

Regarding claims 1 and 16, Frost shows a transfer case/gear box assembly 22 (see Fig. 6) comprising: an input shaft 24 coupled to a transmission of a vehicle; an output shaft 26

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selectively coupled to the input shaft; a planetary gear assembly 28A for transferring drive torque from the input shaft to the output shaft, said planetary gear assembly including a sun gear 64, a ring gear 68 and a plurality of pinion gears 70A mounted to a common carrier 62, said sun gear and said ring gear meshing with the plurality of pinion gears; a direct clutch assembly 82 including a first set of clutch plates and a second set of clutch plates (i.e., inner and outer clutch pack 96), wherein when the clutch assembly is activated, the first and second set of clutch plates are coupled together; and a clutch/brake assembly 84 including a drum 142, wherein the clutch/brake assembly 84 is engaged to prevent the drum from rotating, and wherein the combination of the planetary gear assembly, the direct clutch assembly and the clutch/brake assembly provide a selectable gear ratio where the gear ratio of the transfer case/gear box combines with the vehicle transmission to extend the gear ratio range of the vehicle by providing an underdrive gear ratio and a direct drive gear ratio or an overdrive gear ratio and a direct drive gear ratio in addition to gear ratios provided by the transmission.

Frost does not show a clutch pack instead of a band for engaging/disengaging the drum 142 of the clutch/brake assembly 84.

Sherman show a gear box assembly including a planetary gear assembly 56, a direct clutch 14, and a clutch/brake assembly 12 having a drum 16 and a band 22.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clutch/brake assembly 84 of Frost to have a band in view of Sherman because the brake band responds similar to that of a one-way resulting in a smooth interchange which will be virtually imperceptible to the operator (col. 4, lines 46-49).

Regarding claim 6, Frost shows a transfer case 22 providing a vehicle drive mode for all-wheel drive and two-wheel drive (see col. 2).

Regarding claim 7, Frost shows the underdrive gear ratio or the overdrive gear ratio being selectively engaged either automatically (via the controller 52) or by a operator input switch 56.

Regarding claims 2 and 17, Frost does not show the input shaft being coupled to the ring gear, the output shaft being coupled to the carrier and the sun gear is coupled to the first set of clutch plates and the drum.

Sherman show a gear box assembly including a planetary gear assembly 56, a direct clutch 14, and a clutch/brake assembly 12 having a drum 16 and a band 22, wherein the input shaft 44 is coupled to the ring gear 58, the output shaft 62 is coupled to the carrier 60, and the sun gear 54 is coupled to the first set 40 of clutch plates and the drum 16, and wherein engaging the band couples the sun gear to ground 30 to provide the underdrive gear ratio from the ring gear through the carrier to the output shaft, and wherein activating the clutch assembly couples the sun gear to the ring gear to provide the direct drive gear ratio from the input shaft to the output shaft.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transfer case/gear box of Frost in view of Sherman as set forth above in order to provide an improved power transmission and control (col. 1, lines 63-67).

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6. Claims 3-5 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frost (US 6,612,959) in view of Sherman (US 5,511,639) as applied to claims 1 and 16 above, and further in view of Miyauchi et al (US 3,908,485).

The combination of Frost and Sherman does not specify the transfer case/gear box assembly having gear ratios as recited in claims 3-5 and 18-20. It is old and well known in the art that the gear ratio can be changed by changing the number of teeth of gear components of the planetary gear. The evidence is shown in the Miyauchi et al reference (see col. 9, lines 11-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the number of teeth of the gear components in the planetary gear of the combination of Frost and Sherman to have the gear ratios as recited in claims 3-5 and 18-20 since Examiner takes an Official Notice that the gear ratio changed by changing the number of teeth of gear components of the planetary gear is old and well known in the art (see Miyauchi et al reference, col. 9, lines 11-14).

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1 and 16 have been considered but are moot in view of the new ground(s) of rejection (see the paragraph 5).

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### *Communication*

9. Submission of your response by facsimile transmission is encouraged. The fax phone numbers for the organization where this application or proceeding is assigned are **(571) 273-8300**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see M.P.E.P. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check should not be submitting by facsimile transmission separately from the check. Responses submitted by facsimile transmission should include a Certificate of Transmission (M.P.E.P. 512). The following is an example of the format the certification might take:

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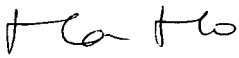
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If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and M.P.E.P. 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha D. Ho whose telephone number is **571-272-7091**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on **571-272-7095**.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HDH  
(571) 272-7091  
June 29, 2006

  
**HAHO**  
**PRIMARY EXAMINER**  
Art Unit 3681

6/29/06